DOCUMENT RESUME

ED 059 979 SP 005 591

AUTHOR Howe, Trevor G.
TITLE Teacher Supply and Demand Study for Iowa.
INSTITUTION Iowa State Dept. of Public Instruction, Des Moines.; Iowa State Univ. of Science and Technology, Ames. Dept. of Education.
PUB DATE Feb 72
NOTE 16p.; Presented at the American Association of Colleges for Teacher Education Annual Meeting, Chicago, Ill., Feb. 1972

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS *Data Analysis; *Employment Opportunities; *Surveys; *Teacher Employment; *Teacher Supply and Demand

ABSTRACT

This survey investigated problems of teacher supply and demand and collected information from local school districts to be used as base-line data on the current employment of teachers. Iowa's 452 school districts comprised the total sample for the empirical data given. The model survey was designed so that it could be replicated in subsequent years for comparison and trend analysis, and so that the approach might be implemented in other states. Experience gained from this survey will be used to modify and improve the collection techniques. This survey provided employment and vacancy data that have not previously been available. The areas having the greatest number of teachers seeking jobs are social studies, elementary education, physical education, and English. Music, science, special education, mathematics, industrial arts, and vocational agriculture had fewer applications. The vacancy information collected in this study is considered as a valuable contribution when used as base-line data on the current employment of teachers. It is recommended that the study continue in subsequent years for comparison and trend analysis. It is further recommended that caution be exercised in the interpretations and inferences derived from data collected for a single year. Seven tables are provided. (Author/JLF)

ED 059979

Gloria
Good topic for RIE
(y ucel done) gB

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY

TEACHER SUPPLY AND DEMAND STUDY FOR IOWA

Trevor G. Howe
Professor of Education
Iowa State University
Ames, Iowa

Presented at the Annual Meeting
American Association of Colleges for Teacher Education
Chicago, Illinois

February 24, 1972

SP 005 591

TEACHER SUPPLY AND DEMAND STUDY FOR IOWA

by Trevor G. Howe

Foremost in the minds of those students graduating from college who are preparing to teach is the question, "What are the opportunities for employment?" Almost three years ago college graduates began to experience difficulty in finding teaching positions in some subject areas, and there appeared to be a general tightening of job opportunities in most areas. The information supplied by college placement officials on experiences of job applicants, although incomplete, did create an awareness of this situation. As a consequence, staff members at institutions preparing teachers began to express concern about this lack of placement information. It became imperative that pertinent and reliable information should be made available to teacher education institutions, Departments of Public Instruction, guidance personnel, prospective teachers, and other concerned groups.

A review of available information indicated that the thirty-year period of teacher shortages had ended abruptly with the school year 1970-71 (1, p. 3). This, coupled with inflation, major changes in the economy, and lower birth rates, further complicated the teacher placement problem. In this setting a study was designed and developed as a cooperative research project. In the summer of 1971 a survey was carried out jointly by the College of Education at Iowa State University and the State Department of Public Instruction.

Problem

The purpose of the survey was to investigate problems of teacher supply and demand and to collect information from the local school districts to be used as base-line data on the current employment of teachers.

Specific objectives of the study were as follows:

1. To identify the number of certified personnel employed in each school district by subject areas.

2. To ascertain the number of vacancies in each category after teacher contracts were offered in March and were subsequently signed and returned.
3. To identify the number of vacancies by position that had been filled by June 15, 1971.
4. To interpret the expected change, either increase or decrease, in each subject area category for the next school year 1971-72.
5. To forecast future demands or changes over five years, based on projected enrollments, preschool census, general census, and birthrates.
6. To collect, analyze, and compare vacancy information first with other data on teacher supply and then with the demand for teachers
   a. by using information on the average number of teachers prepared in Iowa by subject area over the past three years;
   b. by using information on the graduate follow-up of occupations of persons completing preparation and certificated for each of the past three years.

Methodology - Data Collection

This study was planned to provide empirical data on the teacher supply and demand for the state of Iowa. Therefore, the sample was restricted to the state.

The design was developed as a model to serve two purposes: first, so that it could be replicated in subsequent years for comparison and trend analysis; second, so that the approach might be implemented in other states.

Iowa's 452 school districts comprised the total sample. The local school district was designated as the sampling unit. The districts were stratified into seven school size categories based on total enrollment for the school K-12. (See Table 1.) The following seven school size categories were used: (1) 200-499, (2) 500-749, (3) 750-999, (4) 1000-1499, (5) 1500-1999, (6) 2000-2999, and

(7) 3000 and over.

A survey instrument was developed for data collection and a pilot test was made. Questions pertaining to each school district, such as the number of personnel employed, vacancies, applicants, projected needs, and turnover rates, were of major concern.

On June 14, 1971, a cover letter bearing the joint heading of the College of Education and the Department of Public Instruction was mailed to the superintendent of each of the 452 public school districts in Iowa soliciting their help. Accompanying the letter was a copy of the survey instrument. By July 19, 1971, approximately two-thirds of the schools had responded and returned their questionnaires. A second follow-up letter and another questionnaire were then mailed to the non-respondents. This resulted in a total response of 371 districts representing 82% of the districts in Iowa.

The returned questionnaires were coded and key punched. Detailed frequency tables for each subject taught were developed by using seven size intervals representing the stratification of schools by total enrollment K-12. The information on employment, vacancies, and demand was then tabulated by teacher certification subject areas. A survey summary of the number of teachers employed in Iowa during the 1970-71 school year and the number of vacancies by subject area after contracts were signed and returned is presented in Table 2.

A random sample of school districts that failed to respond to either of the two mailings of the questionnaire was contacted by telephone to determine whether the non-responding sample was biased. The telephone contacts provided vacancy information but rendered less detail than the questionnaire.

Teacher Supply

The information on graduates represented the major potential source of new teacher supply. This information was obtained from the twenty-eight teacher education institutions in the state. The Teacher Education and Certification

Division of the Department of Public Instruction collected and tabulated the information from each institution preparing teachers. A summary of the number of students in Iowa completing preparation for a teaching certificate with a bachelor's degree by subject area has been assembled each year. This information on the supply of new teachers who have graduated for each of the past three years is included as an important part of the present investigation.

Graduate Follow-up

The twenty-eight teacher education institutions in the state have conducted a graduate follow-up for each of the past three years. The institutions have reported this information to the Department of Public Instruction. The graduate follow-up, when considered along with new teacher supply and vacancy data, presented another dimension to the present investigation.

Findings

Information taken from Data on Iowa Schools (3, p. 26) concerning total employment for the school year 1970-71 is presented here for comparison. There were approximately 16,908 elementary, 14,716 secondary, and 800 special education teachers employed in the public schools of Iowa last year.

A survey summary of the employment and vacancy information as reported by the cooperating schools is presented in Table 1. In this study with 371 or 82% of the districts in Iowa reporting, information on employment was collected for 13,704 elementary teachers and 12,312 secondary teachers. There were 3,012 teaching vacancies reported last spring after contracts were signed and returned. These vacancies were identified as 1,548 being at the elementary level and 1,464 at the secondary level.

Survey information on employment and vacancies by subject matter taught is summarized in Table 2. The number of certificated personnel employed in Iowa public schools included in this study is identified by subject matter areas. Most of the vacancies occurring at contract time were filled shortly thereafter.

There were very few vacancies remaining at the time of the survey.

The frequency of responses indicating the expected change, either increase or decrease, in each subject area for the next school year 1971-72 is tabulated in Table 1. In a more detailed analysis of the information in which the schools were stratified by school size and subject taught, the smaller schools were expecting a decrease in teacher personnel and the larger schools anticipated an increase in the number of teachers needed.

The five-year forecast of future demand for teachers or the projected changes by subject area follow the same general trend as the one-year projection. The smaller schools were anticipating declining enrollments and decreases in the number of teachers needed while the larger schools were expecting increases, particularly at the secondary level.

Information from the survey is summarized in Table 3 for the elementary and secondary personnel employed in administration, service, and teaching positions in Iowa during the 1970-71 school year. The service personnel category is further subdivided permitting the identification of counselors, librarians, and personnel in special education.

Information collected on graduates from the twenty-eight teacher education institutions in Iowa represented the major source of data on new teachers in the state. This information has been assembled by the Teacher Education and Certification Division of the Department of Public Instruction. It was prepared for the annual study conducted by the National Education Association (2). A summary by subject matter area of the number of students in Iowa completing preparation for a teaching certificate and holding a bachelor's degree is shown in Table 4. This subject matter area summary is presented for the years 1968, 1969, and 1970 in Table 4. This table presents the new supply of graduates completing teacher education programs. Not all of these persons are available to teach nor do they seek immediate employment in the classroom.

Follow-up information on the occupational status of teacher education graduates has been collected by the twenty-eight teacher education instutitions in the state. This information has been made available by the Teacher Education and Certification Division of the Department of Public Instruction. Examination of Tables 5, 6, and 7 indicates the occupations of persons completing preparation and certificated in 1968, 1969, and 1970 school years. Fields of preparation and levels to be taught are also presented. A noticeable drop in the number of graduates who entered teaching but left the state was experienced from 1968 to 1970. Many qualified teachers do not enter teaching immediately after graduation. Of the 1970 graduates in Table 7, increased numbers were in non-teaching categories such as "otherwise gainfully employed", "continuing formal education", "military service", and "homemaking". There were also twice as many seeking teaching positions when compared with the previous year. This may be further evidence of fewer job opportunities.

Summary and Discussion

The purpose of the survey was to investigate the problems of teacher supply and demand and to collect information from the local school districts to be used to generate base-line data on the current employment of teachers. The design and model developed for this investigation will be replicated in subsequent years for comparison and trend analysis. Experiences and insights gained from this survey will be used to modify and improve the collection techniques.

This survey has provided employment and vacancy data that has not previously been available. The projections offer little hope for sizeable changes in the demand. The current employment problems are partially explained when the tables on the new teacher supply and the follow-up information on the occupational status of teacher education graduates are examined along with the vacancies in the corresponding subject areas.

Several unanswered questions complicate and influence the interpretation of the employment data; for example: "What is the source of teachers filling the vacancies? Are they experienced teachers or directly from college?" The economy is also a factor. The question is raised, "Did the economic conditions influence housewives and others with teaching certificates to reenter the job market in greater numbers?"

Last year there was little teacher turnover. This caused a chain reaction restricting the number of open positions. This added to an already tight market for teachers.

The school districts responding to the questionnaire indicated teaching areas where there appeared to be the greatest number of teachers seeking jobs. They are arranged in rank order as follows: social studies, elementary, physical education, and English.

Teaching areas in which the school districts reported fewer or limited numbers of teachers available are arranged in rank order as follows: music (including vocal and instrumental), science, special education, mathematics, physics, industrial arts, art, and vocational agriculture. These should not be interpreted as being in short supply, only that there were fewer applicants for the vacancies.

The vacancy information collected in this study is considered as a valuable contribution when used as base-line data on the current employment of teachers. It is highly recommended that the study continue in subsequent years for comparison and trend analysis. <u>It is further recommended that caution be exercised in the interpretations and inferences derived from data collected for a single year</u>.

References

(1) Minnesota State Department of Education. Professions Development News Letter. Vol. 2, No. 1. Minnesota State Department of Education, St. Paul, Minnesota. March 1971.

(2) National Education Association: Research Division. Teacher Supply and Demand in Public Schools, 1970. Research Report 1970-R-14. National Education Association, Washington, D.C. c.1970.

(3) State Department of Public Instruction. Data on Iowa Schools; School Year 1970-71, Part 2, Professional Personnel. Department of Public Instruction, Des Moines, Iowa. 1971.

Table 1. Survey Summary of Teachers Employed, Vacancies, and Projected Change in Iowa Public School Districts by Enrollment Size.

School Enrollment K-12	Number of Districts in State	Number of Districts Responding	1970-71 Total Number Employed	After 71-72 Contracts: Number Vacancies This Year	After 71-72 Contracts: Number Filled Since Contracts	1971-72 Indicate No. Expected Change per Category: Increase	1971-72 Indicate No. Expected Change per Category: Decrease	Projected Change in 5 Years Numbers per Category: Increase	Projected Change in 5 Years Numbers per Category: Decrease
200-499	113	87	1,997	339	332	5	37	28	45
500-749	120	100	3,373	482	427	23	63	81	89
750-999	65	54	2,372	298	284	19	40	57	70
1000-1499	63	50	2,728	310	296	20	33	77	65
1500-1999	20	19	1,539	167	157	11	26	29	37
2000-2999	43	36	4,206	407	362	57	34	137	77
3000 & over	28	25	9,801	1,009	936	154	60	334	86
Total	452	371	26,016	3,012	2,794	289	293	743	469

Table 2. Survey Summary of the Number of Teachers Employed in Iowa During the 1970-71 School Year and the Number of Vacancies by Subject Area after Contracts Were Signed and Returned.

Subject Area or Level	1970-71 Total Number Employed	Number Vacancies Spring 1970-71	1971-72 Expected Change		Projected Change in 5 Years	
			Increase	Decrease	Increase	Decrease
A. ELEMENTARY						
1. Classroom Teacher	13,704	1,548	162	195	336	369
B. SECONDARY	12,312	1,464	127	98	407	100
1. Agriculture	191	31	3	3	6	7
2. Art	357	59	6	1	19	0
3. Business Education						
a. Bookkeeping	190	16	0	0	2	0
b. Business Law	57	6	0	0	0	0
c. Business Training	150	20	1	1	9	0
d. Office Education	113	15	1	0	7	0
e. Shorthand	102	10	0	0	1	1
f. Typewriting	255	34	3	1	14	0
4. Distributive Education	56	4	0	0	11	0
5. Driver Education	294	24	2	4	9	3
6. English Language Arts						
a. English	983	220	8	21	43	13
b. Journalism	48	7	0	2	2	0
c. Speech & Dramatic Arts	192	28	0	1	5	1
7. Foreign Languages						
a. French	152	19	3	1	5	1
b. German	64	11	1	0	2	2
c. Latin	34	5	0	3	0	5
d. Spanish	194	33	2	4	8	2
8. Home Economics	375	50	6	1	11	0
9. Industrial Arts	557	67	17	3	42	2
10. Mathematics	1,147	116	10	7	31	4
11. Music	714	114	2	3	10	4
12. Physical & Health Education	681	85	9	4	32	4
13. Science						
a. Biology	433	29	3	2	14	2
b. Chemistry	216	32	1	1	1	1
c. Earth Science	184	24	0	0	10	0
d. General Science	270	35	2	2	9	1
e. Physical Science	202	22	3	3	9	1
f. Physics	156	21	0	0	3	1
g. Physiology	21	1	0	0	0	0
h. Unspecified	--	--	--	--	--	--
14. Social Studies						
a. American Government	315	38	1	1	15	1
b. American History	442	62	5	2	22	5
c. Economics	118	16	2	1	4	0
d. Geography	179	15	3	0	2	0
e. Psychology	48	5	1	0	3	0
f. Sociology	102	9	3	1	6	0
g. World History	250	28	2	3	9	2
h. Unspecified	--	--	--	--	--	--

Table 3. Survey Summary of Information on Elementary and Secondary Personnel Employed in Administration, Service, and Teaching Positions in Iowa During the 1970-71 School Year.

Employment Area	1970-71 Total Number Employed	After 71-72 Contracts: Number Vacancies This Year	After 71-72 Contracts: Number Filled Since Contracts	1971-72 Indicate No. Expected Change per Category: Increase	1971-72 Indicate No. Expected Change per Category: Decrease	Projected Change in 5 Years Numbers per Category: Increase	Projected Change in 5 Years Numbers per Category: Decrease
Elementary							
Administration	710	49	34	5	9	24	11
Service Personnel							
Counselors	100	13	12	10	3	51	1
Librarians	242	28	26	13	3	54	0
Special Education	287	38	32	16	5	15	0
Teaching Personnel	13,704	1,548	1,426	162	195	336	369
Secondary							
Administrative Personnel	616	61	51	5	5	13	1
Service Personnel							
Counselors	668	66	61	3	3	21	5
Librarians	447	44	41	0	1	11	0
Special Education	158	29	24	6	1	7	0
Teaching Personnel	12,312	1,464	1,368	127	98	407	100

Table 4. Summary of the Number of Students in Iowa Completing Preparation for a Teaching Certificate with a Bachelor's Degree, by Subject Area for the Past Three Years.

Subject Area or Level	Number of Graduates by Year			Total	Mean
	1968	1969	1970		
A. ELEMENTARY					
1. Classroom Teacher	1,693	2,161	2,046	5,900	1,966.7
B. SECONDARY					
1. Agriculture	30	47	47	124	41.3
2. Art	122	138	210	470	156.7
3. Business Education	107	143	142	392	130.7
a. Bookkeeping					
b. Business Law					
c. Business Training					
d. Office Education					
e. Shorthand					
f. Typewriting					
4. Distributive Education	16	10	15	41	13.7
5. Driver Education[a]					
6. English Language Arts					
a. English	382	544	515	1,441	480.3
b. Journalism	4	10	15	29	9.7
c. Speech and Dramatic Arts	69	112	108	289	96.3
7. Foreign Languages					
a. French	87	105	77	269	89.7
b. German	39	36	50	125	41.7
c. Latin	26	4	5	35	11.7
d. Spanish	92	88	106	286	95.3
8. Home Economics	139	247	189	575	191.7
9. Industrial Arts	66	82	82	230	76.7
10. Mathematics	214	227	229	670	223.3
11. Music	199	214	212	625	208.3
12. Physical and Health Education	392	476	532	1,400	466.7
13. Science					
a. Biology	112	153	134	399	133.0
b. Chemistry	23	32	17	72	24.0
c. Earth Science[b]					
d. General Science	24	37	43	104	34.7
e. Physical Science[b]					
f. Physics	13	12	15	40	13.3
g. Physiology[b]					
h. Unspecified	24	19	55	98	32.7
14. Social Studies					
a. American Government[c]					
b. American History	213	324	325	862	287.3
c. Economics	41	109	93	243	81.0
d. Geography[d]					
e. Psychology[e]					
f. Sociology[f]					
g. World History[g]					
h. Unspecified	260	330	299	889	296.3
SECONDARY TOTAL	2,694	3,499	3,515	9,708	3,236.0

[a]No information. [b]Combined in "Science, Unspecified." [c]Combined in "Social Studies, Unspecified." [d]Combined with American and World History. [e]Combined with Economics and Sociology. [f]Combined with Economics and Psychology. [g]Combined with American History and Geography.

Table 5. Occupation on November 1, 1968, of Persons Completing Preparation between September 1, 1967, and August 31, 1968, with Qualifications for Standard Certification in Iowa.

Field of Preparation	TEACHING		NON-TEACHING							Total
	In State	Outside State	Otherwise Gainfully Employed	Continuing Formal Study	Military Service	Home-making	Seeking Teaching Position	Seeking Non-teaching Position	No Information	
A. ELEMENTARY										
1. Classroom Teacher	959	561	36	24	8	98	3	1	89	1,779
B. SECONDARY										
1. Agriculture	23	--	1	1	1	--	--	--	7	33
2. Art	48	18	4	5	1	5	--	--	9	90
3. Business Education	74	30	23	3	1	4	1	--	6	142
4. Distributive Education	8	--	2	--	--	--	--	--	--	10
5. English Language Arts										
a. English	188	135	20	23	5	31	5	--	65	472
b. Journalism	2	--	1	--	--	--	1	--	1	5
c. Speech and Dramatic Arts	27	18	1	9	2	3	--	--	4	64
6. Foreign Languages	80	74	12	18	4	12	2	--	27	229
7. Home Economics	8[illegible]	39	9	7	--	16	--	--	3	159
8. Industrial Arts	40	9	3	4	10	--	--	--	3	69
9. Mathematics	113	59	8	17	6	4	--	--	17	224
10. Music	58	15	1	3	4	5	3	--	11	100
11. Physical and Health Education	134	99	13	17	19	3	--	--	17	302
12. Sciences										
a. Biology	40	30	7	9	1	3	--	--	11	101
b. Chemistry	8	8	4	1	2	1	--	--	6	30
c. General Sciences	24	9	1	3	1	--	--	--	7	45
d. Physics	2	3	1	2	1	--	--	--	10	19
e. Unspecified	14	4	--	1	1	--	--	--	--	20
13. Social Studies	196	121	26	49	22	17	4	--	95	530
SECONDARY TOTAL	1,164	671	137	172	81	104	16	--	299	2,644
C. SERVICE PERSONNEL										
1. Guidance	--	--	--	--	--	--	--	--	--	---
2. Librarian	--	--	--	--	--	--	--	--	--	---
3. Special Education	38	11	3	5	--	--	--	--	22	79
4. Other	--	--	--	--	--	--	--	--	--	---

Table 6. Occupation on November 1, 1969, of Persons Completing Preparation between September 1, 1968, and August 31, 1969, with Qualifications for Standard Certification in Iowa.

Field of Preparation	TEACHING		NON-TEACHING							Total
	In State	Outside State	Otherwise Gainfully Employed	Continuing Formal Study	Military Service	Home-making	Seeking Teaching Position	Seeking Non-teaching Position	No Information	
A. ELEMENTARY										
1. Classroom Teacher	1,102	500	34	39	7	93	1	10	209	1,995
B. SECONDARY										
1. Agriculture	29	3	1	9	4	--	--	--	19	65
2. Art	79	28	11	7	4	8	1	--	13	151
3. Business Education	62	21	15	4	2	5	2	--	7	118
4. Distributive Education	4	2	2	--	2	--	--	--	--	10
5. English Language Arts										
a. English	223	129	17	42	7	28	5	4	41	496
b. Journalism	1	1	2	--	--	--	--	--	3	7
c. Speech and Dramatic Arts	29	21	4	9	2	2	2	--	13	82
6. Foreign Languages	74	32	14	23	7	11	3	1	22	187
7. Home Economics	62	40	14	7	--	32	2	--	5	162
8. Industrial Arts	37	23	3	4	7	--	--	--	--	74
9. Mathematics	125	39	12	14	10	1	--	--	16	217
10. Music	98	51	4	18	4	6	1	--	12	194
11. Physical and Health Education	211	100	17	10	25	13	4	--	40	420
12. Sciences										
a. Biology	42	30	3	6	3	--	--	--	5	89
b. Chemistry	8	6	--	--	1	--	--	--	--	15
c. General Sciences	13	4	5	9	4	5	--	--	--	40
d. Physics	3	2	--	1	--	--	--	--	--	6
e. Unspecified	33	6	5	2	4	1	--	--	6	57
13. Social Studies	203	104	49	51	41	14	16	4	58	540
SECONDARY TOTAL	1,336	642	178	216	127	126	36	9	260	2,930
C. SERVICE PERSONNEL										
1. Guidance	40	17	--	2	2	--	--	--	21	82
2. Librarian	37	9	1	--	--	3	--	--	13	63
3. Special Education	61	20	--	--	--	2	2	--	50	135
4. Other	10	10	--	15	--	--	--	--	13	48

Table 7. Occupation on November 1, 1970, of Persons Completing Preparation between September 1, 1969, and August 31, 1970, with Qualifications for Standard Certification in Iowa.

Field of Preparation	TEACHING		NON-TEACHING							Total
	In State	Outside State	Otherwise Gainfully Employed	Continuing Formal Study	Military Service	Homemaking	Seeking Teaching Position	Seeking Non-teaching Position	No Information	
A. ELEMENTARY										
1. Classroom Teacher	1,220	479	74	35	20	102	52	--	235	2,217
B. SECONDARY										
1. Agriculture	31	1	17	5	13	--	--	--	23	90
2. Art	90	33	13	8	7	13	5	--	31	200
3. Business Education	57	13	30	9	6	11	7	--	11	144
4. Distributive Education	9	2	1	--	1	--	--	--	--	13
5. English Language Arts										
a. English	225	105	56	39	16	20	21	1	61	544
b. Journalism	4	3	1	--	1	1	--	--	--	10
c. Speech and Dramatic Arts	43	22	14	13	2	3	--	--	11	108
6. Foreign Languages	82	47	26	24	4	12	7	--	22	224
7. Home Economics	96	40	5	4	--	22	2	--	16	185
8. Industrial Arts	37	8	3	8	10	--	1	--	7	74
9. Mathematics	102	51	22	18	23	7	2	--	17	242
10. Music	100	47	13	22	5	7	3	--	13	210
11. Physical and Health Education	205	102	26	29	36	14	10	1	46	469
12. Sciences										
a. Biology	53	20	8	9	9	1	--	--	16	116
b. Chemistry	7	3	1	3	1	--	--	--	2	17
c. General Sciences	6	3	3	1	1	--	--	--	--	14
d. Physics	7	4	2	--	1	--	--	--	--	14
e. Unspecified	30	11	3	6	2	--	--	--	11	63
13. Social Studies	212	129	71	94	61	16	38	--	104	725
SECONDARY TOTAL	1,396	644	315	292	199	127	96	2	391	3,462
C. SERVICE PERSONNEL										
1. Guidance	11	8	--	--	--	--	--	--	27	46
2. Librarian	50	4	4	1	--	5	--	--	24	88
3. Special Education	60	29	3	--	--	1	1	--	64	158
4. Other	16	12	8	--	--	--	--	--	64	100